CLAIMS

1. An image generation system which generates an image of an object formed by a primitive surface, the image generation system comprising:

impact computation means which computes an impact position at which an impact is imparted to the object;

distortion computation means which performs computations for causing the distortion of the primitive surface in the vicinity of the impact position; and

image generation means which generates an image of the object formed by the primitive surface that has been distorted after the impact was imparted to the object.

2. The image generation system as defined in claim 1, wherein the distortion computation means comprises:

point-to-be-moved determination means which determines at least one surface-specifying point that is to be moved, based on the impact position, from among surface-specifying points that are distributed over the surface of the object or in the vicinity of the object for defining the primitive surface that forms the object;

means which computes at least one distortion point for specifying the shape of the primitive surface that is distorted by an impact; and

means which causes the position of the thus-determined surface-specifying point to move to the distortion point; and

wherein the image generation means specifies the primitive surface based on the surface-specifying point that has been moved and generates an image.

3. The image generation system as defined in claim 2,

wherein the impact computation means further comprises means which calculates the magnitude and direction of the impact imparted to the object; and

wherein the distortion point is calculated from at least one of the impact position and the magnitude and direction of the impact.

4. The image generation system as defined in claim 2,

wherein the surface-specifying points are distributed in a predetermined density.

5. The image generation system as defined in claim 2,

wherein the surface-specifying points are distributed in an arrangement that deviates in a random manner from grid points.

6. The image generation system as defined in claim 2,

wherein the density of distribution of the surface-specifying points is adjusted in accordance with the magnitude of distortion of the object due to an impact.

7. The image generation system as defined in claim 2,

wherein the point-to-be-moved determination means determines a surface-specifying point in the vicinity of the impact position as a point to be moved.

8. The image generation system as defined in claim 2, wherein the surface-specifying points are distributed in real-time after the object has been subjected to an impact.

9. The image generation system as defined in claim 8, wherein at least one of the range and density of distribution of the surface-specifying points is determined in accordance with an impact that has been imparted to the object.

10. The image generation system as defined in claim 2, further comprising texture mapping computation means which performs computations necessary for mapping a texture onto the primitive surface that has been distorted by an impact; wherein the texture mapping computation means performs texture mapping processing, using texture coordinates that corresponded to the surface-specifying point before movement, even when the surface-specifying point has been moved by an impact.

11. The image generation system as defined in claim 2, further comprising texture mapping computation means which performs computations necessary for mapping a texture onto the primitive surface that has been distorted by an impact;

wherein the texture mapping computation means comprises means which performs texture mapping processing, using texture coordinates which correspond to the impact position and are related to the surface-specifying point that has been moved by an impact.

12. The image generation system as defined by claim 2,

wherein image generation is performed for an object formed by polygonal surfaces having the surface-specifying points as vertices.

13. The image generation system as defined in claim 2, further comprising:

means which performs image generation by using a polygonal object having the surface-specifying points as vertices, and performs shading processing in such a manner that the vicinity of the vertices after movement is darker, when the vertices have been moved by an impact.

14. An image generation system which generates an image of an object formed by a polygonal surface, the image generation system comprising:

object information storage means which stores information on the object formed by the polygonal surface having vertices that are a plurality of points distributed over the surface of the object at a predetermined density;

point-to-be-moved determination means that operates when

an impact is imparted to the object, for determining at least one vertex to be moved, based on an imparted impact position;

means which causes the vertex to be moved to move, based on the magnitude and direction of the impact imparted to the object; and

image generation means which generates an image of the object after a distortion caused by the impact, using the vertex that has been moved.

15. A computer-usable program embodied on an information storage medium or in a carrier wave, in which is stored information for controlling an image generation system which generates an image of an object formed by a primitive surface; the program further comprising information necessary for implementing:

impact computation means which computes an impact position at which an impact is imparted to the object;

distortion computation means which performs computations for causing the distortion of the primitive surface in the vicinity of the impact position; and

image generation means which generates an image of the object formed by the primitive surface that has been distorted after the impact was imparted to the object.

16. The program embodied on an information storage medium or in a carrier wave as defined in claim 15, wherein the distortion computation means comprises:

point-to-be-moved determination means which determines at least one surface-specifying point that is to be moved, based on the impact position, from among surface-specifying points that are distributed over the surface of the object or in the vicinity of the object for defining the primitive surface that forms the object;

means which computes at least one distortion point for specifying the shape of the primitive surface that is distorted by an impact; and

means which causes the position of the thus-determined at least one surface-specifying point to move to the at least one distortion point; and

wherein the image generation means comprises information necessary for specifying the primitive surface based on the surface-specifying point that has been moved and for generating an image.

17. The information storage medium as defined in claim 16,

wherein the impact computation means further comprises means which calculates the magnitude and direction of the impact imparted to the object; and

wherein the program comprises information necessary for calculating the at least one distortion point from at least one of the impact position and the magnitude and direction of the impact.

18. The program embodied on an information storage medium or

on a carrier wave as defined in claim 16,

the program further comprising information necessary for distributing the surface-specifying points in a predetermined density.

19. The program embodied on an information storage medium or in a carrier wave as defined in claim 16,

the program further comprising information necessary for distributing the surface-specifying points in an arrangement that deviates in a random manner from grid points.

20. The program embodied on an information storage medium or in a carrier wave as defined in claim 16,

the program further comprising information necessary for adjusting the density of distribution of the surface-specifying points in accordance with the magnitude of distortion of the object due to an impact.

21. The program embodied on an information storage medium or in a carrier wave as defined in claim 16,

the program further comprising information necessary for ensuring that the point-to-be-moved determination means determines a surface-specifying point in the vicinity of the impact position as a point to be moved.

22. The program embodied on an information storage medium or in a carrier wave as defined in claim 16,

the program further comprising information necessary for distributing the surface-specifying points in real-time after the object has been subjected to an impact.

23. The program embodied on an information storage medium or in a carrier wave as defined in claim 22,

the program further comprising information necessary for determining at least one of the range and density of distribution of the surface-specifying points in accordance with an impact that has been imparted to the object.

24. The program embodied on an information storage medium or in a carrier wave as defined in claim 16, the program further comprising information necessary for:

implementing texture mapping computation means which performs computations necessary for mapping a texture onto the primitive surface that has been distorted by an impact; and

causing the texture mapping computation means to perform texture mapping processing, using texture coordinates that corresponded to the surface-specifying point before movement, even when the surface-specifying point has been moved by an impact.

25. The program embodied on an information storage medium or in a carrier wave as defined in claim 16, the program further comprising information necessary for:

implementing texture mapping computation means which

performs computations necessary for mapping a texture onto the primitive surface that has been distorted by an impact; and

causing the texture mapping computation means to perform texture mapping processing, using texture coordinates which correspond to the impact position and are related to the surface-specifying point that has been moved by an impact.

26. The program embodied on an information storage medium or in a carrier wave as defined in claim 16,

the program further comprising information necessary for performing image generation for an object formed by polygonal surfaces having the surface-specifying points as vertices.

27. The program embodied on an information storage medium or in a carrier wave as defined in claim 16,

the program further comprising information necessary for implementing means which performs image generation by using a polygonal object having the surface-specifying points as vertices, and performs shading processing in such a manner that the vicinity of the vertices after a movement is darker, when the vertices have been moved by an impact.

28. A computer-usable program embodied on an information storage medium or in a carrier wave, in which is stored information for controlling an image generation system which generates an image of an object formed by a polygonal surface; the program comprising information necessary for implementing:

object information storage means which stores information on the object formed by the polygonal surface having vertices that are a plurality of points distributed over the surface of the object at a predetermined density;

point-to-be-moved determination means that operates when an impact is imparted to the object, for determining at least one vertex to be moved, based on an imparted impact position;

means which causes the vertex to be moved to move, based on the magnitude and direction of the impact imparted to the object; and

image generation means which generates an image of the object after a distortion caused by the impact, using the vertex that has been moved.